



January 26, 2023
ESCD/NRC 23-001

ATTN: Document Control Desk
Director, Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: **10CFR 71.95 Event Report – Docket 71-9168, Certificate of Compliance
USA/9168/B(U)-96, 8-120B Transport Package**

Dear Director,

Pursuant to 10CFR71.95(a)(3), EnergySolutions hereby submits the attached report (Attachment 1) for one instance on October 9, 2020, in which Condition 5(b)(2)(i)(1) in Certificate of Compliance No. 9168 was not complied with in making a shipment with the NRC-approved 8-120B Type B transport package. This event was discovered on December 2, 2022, and this report is submitted in accordance with reporting requirements in 10CFR71.95(c). The event is associated with a human performance error/deficiency in training. An evaluation has determined that this deficiency was of low safety significance, there was no reduction in effectiveness of the package and no exposure of personnel. All other requirements of the Certificate of Compliance and applicable regulations were met. After identification of the event, appropriate immediate corrective actions were implemented to prevent recurrence.

Should you have any questions regarding this notice, please contact me at (803)591-9074.

This letter is submitted electronically via the NRC Electronic Information Exchange (EIE) system.

Sincerely,

A handwritten signature in black ink, appearing to read "Aleksandr Gelfond".

Aleksandr Gelfond
Director of Engineering/Licensing, Cask Division

Attachment 1: Failure to Observe Certificate of Compliance Condition for the 8-120B Transport Package, January 26, 2023

cc) Pierre Saverot, US NRC, Division of Fuel Management
Amy Hazelhoff, EnergySolutions, VP of Regulatory Affairs



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- (1) A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence:**

Condition 5(b)(2)(i)(1) of the NRC CoC No. 9168, Rev. 24 for 8-120B shipping (transport) package specified maximum quantity of material per package with the limit determined per the procedure in Attachment 1 to Chapter No.7 of 8-120B package Safety Analysis Report (SAR), Rev. 14 for beta and gamma emitting radionuclides. During the resolution of EnergySolutions Condition Report associated with opportunity for improvement in formal training on 8-120B Type B Transport package CoC requirements for EnergySolutions brokers/shippers, it was identified that one shipment made by EnergySolutions personnel using a 8-120B transport package back on October 9, 2020, did not meet the requirements of this condition. There were no major occurrences during transportation associated with this event and no component or system failures that contributed to the event. There was no reduction in effectiveness of the package and no exposure of personnel.

The following immediate corrective/preventive actions were implemented to preclude recurrence:

- Provide training to EnergySolutions shipper/brokers associated with implementation of the NRC CoC No. 9168 conditions.
- Review EnergySolutions 8-120B transport package shipping records for the past 3 years to ensure that CoC requirements were complied with in all shipment made by EnergySolutions personnel.
- Additional actions will be assigned as required by EnergySolutions Corrective Actions Program upon completion of ongoing Root Cause Analysis (expected by the end of January 2023).

- (2) A clear, specific, narrative description of the event that occurred so that knowledgeable readers conversant with the requirements of part 71, but not familiar with the design of the packaging, can understand the complete event. The narrative description must include the following specific information as appropriate for the particular event.**

It was identified on December 2, 2022, that one shipment (No. T202843) originating at the EnergySolutions Bear Creek Facility on October 9, 2020 and destined for disposal at the EnergySolutions Clive Disposal Facility was not compliant with the 8-120B package CoC Condition and the applicable 8-120B package SAR qualification procedure. The NRC CoC No. 9168, Revision 24, states in Condition 5(b)(2)(i)(1) that “Maximum quantity of material per package with the limit determined per the procedure in Attachment 1 to Chapter No.7 of the application for beta and gamma emitting radionuclides”. In addition to dose rate surveys prior to shipment of the package, this condition was established as a conservative mechanism for qualification of payload to meet dose limits prescribed by 10CFR71 during Normal Conditions of Transport and Hypothetical Accident Conditions. By the payload qualification procedure (for betta and gamma emitting radionuclides) specified in Chapter 7, Attachment 1 of the 8-120B Safety Analysis Report, Rev.14, the sum of fractions for Column 2 in Table 7-1 (specific activity limit) for this payload was calculated to be 3.14, where the maximum sum of fractions shall not



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exceed 0.95. The shipment was completed safely. All other conditions required for the operation and shipment of the package in accordance with the CoC were complied with.

(2)(i) Status of components or systems that were inoperable at the start of the event and that contributed to the event:

This criterion is not applicable to the event because there were no components or systems that were inoperable at the start of the event and/or contributed to the event. The package was properly prepared in accordance with applicable requirements.

(2)(ii) Dates and approximate times of occurrences:

Shipment No. T202843 originating at the EnergySolutions Bear Creek Facility on October 9, 2020, and received at EnergySolutions Clive Disposal Facility on October 12, 2020.

(2)(iii) The cause of each component or system failure or personnel error, if known;

The cause of the event is a human performance deficiency associated with implementation of Condition 5(b)(2)(i)(1) in CoC No. 9168.

(2)(iv) The failure mode, mechanism, and effect of each failed component, if known:

This criterion is not applicable to the event because no components failed.

(2)(v) A list of systems or secondary functions that were also affected for failures of components with multiple functions:

This criterion is not applicable to the event because no components failed.

(2)(vi) The method of discovery of each component or system failure or procedural error:

There was no component or system failure. During the resolution of the EnergySolutions Condition Report (ES-COM-CR-2022-414) associated with opportunity for improvement in formal EnergySolutions brokers/shippers training on Type B cask CoC requirements, as part of an extended condition action item, shipments of 8-120B packages made by EnergySolutions shippers/brokers within the past 3 years were reviewed. Upon review of documentation for shipment No. T202843, the issue was identified (December 2, 2022).

(2)(vii) For each human performance-related root cause, a discussion of the cause(s) and circumstances:

The cause of the non-compliance was a human performance related issue associated with a deficiency in training for EnergySolutions brokers/shippers in relation to implementation of the NRC CoC.9168, Rev. 24 CoC requirements. The established system of controls was not adequate to identify or mitigate potential human performance error.



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(2)(viii) The manufacturer and model number (or other identification) of each component that failed during the event.

Manufacturer and model numbers associated with component failure are not applicable because no components failed.

(2)(ix) For events occurring during use of a packaging, the quantities and chemical and physical form(s) of the package contents

Shipment T202843		Chemical and Physical Form	
Radionuclide	Activity (Ci)		
Am-241	2.7E-04	Waste Nomenclature: Filter Media and Dry Active Waste packaged in a secondary container (steel).	
C-14	2.1E-04		
Ce-144	3.7E-09		
Cm-242	1.9E-03		
Cm-243	1.4E-03		
Cm-244	1.4E-03		
Co-60	3.4E+02		
Cs-134	5.5E-06		
Cs-137	3.8E-02		
Fe-55	4.2E+01		
H-3	1.1E-02		
I-129	0.0E+00		Chemical Form: Solid Metal Oxides
Mn-54	2.1E-01		
Ni-59	1.3E-02		
Ni-63	1.6E+00		
Pu-238	2.6E-03		
Pu-239	4.3E-04		
Pu-240	4.0E-04		
Pu-241	2.0E-02		
Sb-125	3.5E-01		
Sr-90	1.3E-03		
Tc-99	4.4E-02		
Zn-65	7.13E-09		
Total:	3.8E+02		

(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.

There were no systems and/or components that failed during the event. There were no safety consequences or implications of the event. Payload placement in the secondary container and



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self-shielding effectiveness of the payload within the 8-120B package allowed it to meet external radiation levels prescribed by applicable regulations.

- (4) A description of any corrective actions planned because of the event, including the means employed to repair any defects, and actions taken to reduce the probability of similar events occurring in the future.**

This event has been entered in EnergySolutions Condition Report (ES-COM-CR-2022-533). In addition to immediate actions identified in (1) above, EnergySolutions Corrective Action Program will be implementing appropriate corrective actions to strengthen the training program and improve the current system of controls to prevent reoccurrence of this event based on the outcome of the ongoing Root Cause Analysis.

- (5) Reference to any previous similar events involving the same packaging that are known to the licensee or certificate holder.**

No previous similar events were identified.

- (6) The name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information.**

Aleksandr Gelfond
EnergySolutions
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- (7) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.**

There were no exposures to individuals as a result of this event.